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| APPLICATION NO.               | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-------------------------------|-------------|----------------------|---------------------|------------------|
| 10/661,211                    | 09/12/2003  | Gyan P. Sinha        | 061801/1068         | 7189             |
| 7590                          |             | 01/09/2008           |                     |                  |
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|                               |             |                      | EXAMINER            |                  |
|                               |             |                      | SHUMATE, PAUL W     |                  |
|                               |             |                      | ART UNIT            | PAPER NUMBER     |
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|                               |             |                      | 01/09/2008          | PAPER            |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/661,211

Applicant(s)

SINHA ET AL.

Examiner

Paul Shumate

Art Unit

3694

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-32 is/are rejected.
- 7) ☒ Claim(s) 16 and 17 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

**Status of Claims**

1. This action is in reply to the Application filed on 09/12/2003. Claims 1-32 are currently pending.

***Claim Objections***

2. Claims 16 and 17 objected to because of the following informalities:
3. Each claim includes the limitation "estimating bucket transition distribution" in its respective preamble. The examiner suggests rewriting the limitations either as "estimating a bucket transition distribution" or as "estimating bucket transition distributions." Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:  
  
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
5. Claims 2-8, 10, 11, 15, 16, 18, 19, 21-24, 26, and 28-32 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
6. Regarding the following claims:  
  
Claim 2 recites the limitation(s) "the buckets" in line(s) 1.  
  
Claim 4 recites the limitation(s) "the estimating" and "the probability" in line(s) 1.  
  
Claim 5 recites the limitation(s) "the buckets" and "the estimating" in line(s) 1-2.  
  
Claim 6 recites the limitation(s) "the estimating" in line(s) 1.  
  
Claim 8 recites the limitation(s) "the calculated bucket transition probabilities," "the estimated bucket transition distributions," "the bonds," and "the credit risk" in line(s) 3-6.

Claim 10 recites the limitation(s) "The system of claim 10" and "the buckets" in line(s) 1-2.

Claim 16 recites the limitation(s) "the calculated bucket transition probabilities," "the estimated bucket transition distributions," "the bonds," and "the credit risk" in line(s) 4-7.

Claim 18 recites the limitation(s) "The computer readable medium of Claim 15" and "the buckets" in line(s) 1.

Claim 19 recites the limitation(s) "The computer readable medium of Claim 16" in line(s) 1.

Claim 21 recites the limitation(s) "The computer readable medium of Claim 18," "the buckets," and "the estimating" in line(s) 1-2.

Claim 22 recites the limitation(s) "The computer readable medium of Claim 19" and "the estimating" in line(s) 1.

Claim 23 recites the limitation(s) "The computer readable medium of Claim 16" in line(s) 1.

Claim 24 recites the limitation(s) "The computer readable medium of Claim 16," "the calculated bucket transition probabilities," "the estimated bucket transition distributions," "the bonds," and "the credit risk" in line(s) 1 and 3-6.

Claim 26 recites the limitation(s) "the buckets" in line(s) 1.

Claim 28 recites the limitation(s) "the probability" in line(s) 1.

Claim 29 recites the limitation(s) "the buckets" in line(s) 1.

Claim 32 recites the limitation(s) "the calculated bucket transition probabilities," "the estimated bucket transition distributions," "the bonds," and "the credit risk" in line(s) 3-6.

There is insufficient antecedent basis for the limitations listed above in the claims.

7. Claims 3, 11, and 30 are rejected for incorporating the errors from the rejected claims on which they depend.

8. Claims 7, 15, 23, and 31 include the limitations "further including multiple simulations" or "further including multiple trials." As written, the claims are unclear, vague, and indefinite. For example, claim 7, if written in independent form, would read as:

*A method for estimating a bucket transition distribution for one or more bonds, comprising the steps of:*

*identifying a plurality of price buckets, wherein one of the buckets corresponds to an exit state;*

*calculating bucket transition probabilities for a first bond;*

*estimating a bucket transition distribution for the first bond using the calculated bucket transition probabilities by estimating bucket transitions based on the bucket transition probabilities until the exit state or a maturity date of the first bond is reached, thereby completing a first simulation;*

*multiple simulations.*

The final step of "multiple simulations" is not and fails to particularly point out and distinctly claim the subject matter which the applicant regards as the invention. For the purposes of this examination, the examiner will interpret the limitation "multiple simulations" to mean "repeating said calculating step and said estimating step for a specified number of iterations on said first bond."

***Claim Rejections - 35 USC § 102***

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claim(s) 1-5, 7-13, 15-21, 23-29, 31, and 32 rejected under 35 U.S.C. 102(b) as being anticipated by Lange, U.S. Patent No.: 6,321,212.

Examiner's Note: The Examiner has cited particular columns and line numbers in the references as applied to the claims for the convenience of the applicant. Although the specified citations are representative of the teachings in the art and are applied to the specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the applicant, in preparing the responses, to fully consider the references in entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the Examiner.

Independent claims are examined together, since they are not patentable distinct. If applicant expressly states on the record that two or more independent and distinct inventions are claimed in a single application, the Examiner may require the applicant to elect an invention to which the claims will be restricted.

As per claims 1, 9, 17, and 25, Lange teaches identifying a plurality of price buckets/states (see at least column 2 lines 1-6, column 10 lines 47-49, column 36 lines 20-26, and column 49 lines 6-7) calculating bucket/state transition probabilities for a security (see at least column 2 lines 7-19, column 23 lines 40-42, column 23 lines 46-48, column 34 lines 23-26, column 35 lines 12-13, and column 36 lines 45-46) estimating a bucket/state transition distribution for the security using the calculated bucket transition probabilities (see at least column 2 lines 7-19, column 16 lines 24-29, column 34 lines 23-26, and column 77 lines 14-22) where the method can be adapted for bonds, along with many other financial products (see at least column 7 lines 35-40, column 23 lines 47-49, column 46 lines 34-36, and column 55 lines 20-45).

As per claims 2, 3, 10, 11, 18, 19, 26, and 27, Lange further teaches including exit states (see at least column 10 lines 44-50) based on default (see at least column 49 lines 6-7 and column 49 lines 49-

53); call (see at least column 53 lines 42-49), and maturity date events (see at least column 45 lines 43-44).

As per claims 4, 5, 7, 8, 12, 13, 15, 16, 20, 21, 23, 24, 28, 29, 31, and 32 Lange further teaches determining the probability that a financial product is in a particular state at a specific time (see at least column 12 lines 2-5, column 37 lines 43-45, column 54 lines 48-65, and column 114 lines 28-32) where the state is default (see at least column 49 lines 6-7 and column 49 lines 49-53) and a default rate is determined for a particular time (see at least column 49 lines 4-10 and column 79 lines 25-30). Lange further teaches running many simulations/scenarios (see at least column 77 lines 1-7 and column 82 lines 13-15) to obtain a probability distribution for a financial product or for a given group of financial products (see at least column 77 lines 49-59 and column 80 lines 23-32) which may include Monte Carlo Simulations (see at least column 77 lines 1-13) and Historical Simulations (see at least column 78 lines 3-7).

***Claim Rejections - 35 USC § 103***

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claim(s) 6, 14, 22, and 30 rejected under 35 U.S.C. 103(a) as being unpatentable over Lange in view of Official Notice.

As per claim 6, 14, 22, and 30, Lange does teach a cumulative standard normal function (see at least column 38 lines 1-8) and Lange also teaches that the sum of each state's probability of occurrence forms probability distribution for the financial product (see at least column 16 lines 24-29). However, Lange does not explicitly teach determining a cumulative default rate for a number of time periods by

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summing default balances for each of the number of time periods and dividing the sum by an average balance for a first of the number of time periods.

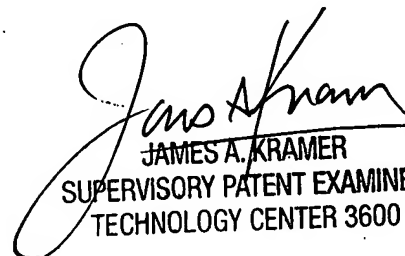
The examiner takes Official Notice that this step is old and well known in the art of probability theory. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to determine a cumulative default rate for a given period of time because an investor may want to invest different amounts in different states and at different times of the product's life in order to hedge exposure to extreme outcomes in order to obtain a desired expected return and relative level of incurred risk (see at least column 39 lines 39-45).

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul Shumate whose telephone number is 571-270-1830. The examiner can normally be reached on M-F 8:30 AM - 6:00 PM, EST alt Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Kramer can be reached on 571-272-6783. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Name: Paul W. Shumate  
Title: Patent Examiner  
Date: 12/26/07  
Signature:



1/7/08  
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